APPENDIX E

Example Inventory and Fee Calculations

In the following example, there are three printing presses that consume 258 tons of ink with an average VOC content of 43%. The presses are controlled with a catalytic incinerator. Refer to the example worksheet 7 for information on the calculation of overall control efficiency.

Fifty tons of clean-up solvent were purchased for the printing presses. Thirty-three tons of spent solvent were sent to a cement kiln for disposal by incineration.

The facility also has a boiler that is capable of burning number two oil and natural gas.

Air Emissions Source Operating Information

Enter a unique point identification (ID) number, which will be used to identify these specific emissions throughout the emissions calculation procedure.

Point ID Number	Briefly describe the process or operation associated with this point ID number. Include model or serial number, horsepower, etc. as applicable. Please list **EACH** operating unit individually.
001	Dual fueled boiler - Unit number 1, Model number 234789 (100 MBtu/hr)

Annual Operating Rate. Enter the applicable 8-digit Source Classification Code(s) (SCC) for this process or operation. In some cases, an SCC ID number will be necessary as an additional identifier. For example, two SCC ID numbers should be used for a boiler burning 1.5% sulfur coal and 0.6% sulfur coal, even though the same SCC is used. Enter the stack ID number from worksheet 2 that the process or operation is associated with. If the process or operation is not vented to a stack or the stack doesn't meet the emissions criteria specified at the top of worksheet 2, enter "NA" for the stack ID field. Enter the annual operating rate and the units of measurement of the annual operating rate.

SCC(s)	SCC ID # (1)	Stack ID # (2)	Annual Operating Rate	Units of Measurement of Annual Operating Rate	Internal Use Only
10200601	01	01	560	Million Cubic Feet	
10200501	02	01	24	Thousand Gallons (0.25% S)	
10200501	03	01	35	Thousand Gallons (0.05% S)	

(1) Please begin assigning 2-digit SCC ID numbers with 01, 02, 03, etc. for each point ID number.
(2) Please begin assigning 2-digit stack ID numbers with 01, 02, 03, etc. Each stack ID number should be used only once for a facility (i.e., every stack should have a unique stack ID number) and be entered on worksheet 2.

Operating Schedule. For this process or operation, enter a typical start time along with the typical hours per day, days per week and weeks per year in operation. Be sure to note whether the start time is a.m. or p.m.

Typical Start Time:	6:00 a.m.	Hours/Day:	10	Days/Week:	7	Weeks/Year:	52

Seasonal Throughput. For this process or operation, enter the percent of the operating rate for 2005 as a portion of the whole year. The total of the four quarters should equal 100%. Note that Dec-Feb is December, January and February of the same calendar year (2005), which are not consecutive months.

Dec-Feb:	25 %	Mar-May:	25 %	June-Aug:	25 %	Sept-Nov:	25 %

Source ID Number: _____ 0110888

Air Emissions Source Operating Information

Enter a unique point identification (ID) number, which will be used to identify these specific emissions throughout the emissions calculation procedure.

Point ID Number	Briefly describe the process or operation associated with this point ID number. Include model or serial number, horsepower, etc. as applicable. Please list **EACH** operating unit individually.
002	Three flexographic printing presses with common catalytic incinerator for VOC control

Annual Operating Rate. Enter the applicable 8-digit Source Classification Code(s) (SCC) for this process or operation. In some cases, an SCC ID number will be necessary as an additional identifier. For example, two SCC ID numbers should be used for a boiler burning 1.5% sulfur coal and 0.6% sulfur coal, even though the same SCC is used. Enter the stack ID number from worksheet 2 that the process or operation is associated with. If the process or operation is not vented to a stack or the stack doesn't meet the emissions criteria specified at the top of worksheet 2, enter "NA" for the stack ID field. Enter the annual operating rate and the units of measurement of the annual operating rate.

SCC(s)	SCC ID # (1)	Stack ID # (2)	Annual Operating Rate	Units of Measurement of Annual Operating Rate	Internal Use Only
40500301	01	NA	258	Tons Ink	
40500314	02	NA	50	Tons Solvent Purchased	

(1) Please begin assigning 2-digit SCC ID numbers with 01, 02, 03, etc. for each point ID number.
(2) Please begin assigning 2-digit stack ID numbers with 01, 02, 03, etc. Each stack ID number should be used only once for a facility (i.e., every stack should have a unique stack ID number) and be entered on worksheet 2.

Operating Schedule. For this process or operation, enter a typical start time along with the typical hours per day, days per week and weeks per year in operation. Be sure to note whether the start time is a.m. or p.m.

Typical Start Time:	6:00 a.m.	Hours/Day:	10	Days/Week:	7	Weeks/Year:	52

Seasonal Throughput. For this process or operation, enter the percent of the operating rate for 2005 as a portion of the whole year. The total of the four quarters should equal 100%. Note that Dec-Feb is December, January and February of the same calendar year (2005), which are not consecutive months.

Dec-Feb:	25 %	Mar-May:	25 %	June-Aug:	25 %	Sept-Nov:	25 %

Stack Information

This worksheet is for reporting all stacks with actual emissions greater than or equal to 20 tons/year NO_x, 5 tons/year SO_x or 5 tons/year PM_{10}. If your facility has no stacks or has no stacks that meet this criteria, skip this worksheet.

Enter the stack information for stacks at your facility that vent emissions from the process or operations listed on worksheet 1. Identify each stack using the point ID and stack ID numbers from worksheet 1. Diameter represents the inside diameter of the top of a circular stack. For non-circular stacks, calculate an equivalent diameter as $d = (1.274 * A)^{1/2}$, where A is the cross-sectional area in square feet. If the exhaust is discharged at ambient temperature, enter 77^0 F for the exit temperature. Note that the flow rate should be reported as acfm (e.g., calculated at the actual operating temperatures).

The table below shows the stack parameters you reported in the previous inventory. Please review the information and make corrections as needed. A blank worksheet 2 is included for listing any stacks not shown below.

Stack ID Number*	Stack Description	Height (ft)	Diameter (ft)	Flow Rate (actual ft³/min)	Exit Temperature (⁰ F)	Velocity (ft/sec)	Internal Use Only
01	Unit number 1	88	5	70320	344	60	

* Reference the stack ID numbers from worksheet 1. Each stack ID number should be used only once for a facility, i.e., every stack should have a unique stack ID number.

Emission Factor Method Calculation Form - Criteria Pollutants*

This worksheet is for calculating criteria pollutant emissions using emission factors. If you are not using emission factors to calculate criteria pollutant emissions, skip this worksheet. If you are using an AP-42 emission factor for ash- or sulfur-containing fuels, complete worksheet 4, and transfer the calculated emission factors from column I on that worksheet to column C on this worksheet.

Enter the point ID, SCC ID and stack ID numbers from worksheet 1.

Point ID Number	001		SCC ID Number	01		Stack ID Number	01

For all criteria pollutants that apply in column A, enter the source of the emission factor in column B and the emission factor in column C. Each emission factor should be in units of pounds per unit of measurement. Transfer the operating rate from worksheet 1 to column D. Multiply column C by column D to obtain uncontrolled emissions in units of pounds for each applicable pollutant; enter the emissions in column E. Divide uncontrolled emissions in pounds by 2,000 to obtain uncontrolled emissions in tons, and enter the result in column F. If the overall control efficiency is zero, transfer the uncontrolled emissions from column F to column H. If the overall control efficiency is not zero, complete worksheet 7 and transfer the quantity 1-OCE from column E on that worksheet to column G below. Multiply 1-OCE by the uncontrolled emissions in column F and enter the result in column H.

Transfer the total emissions for each pollutant from column H to worksheet 8 using the same point ID number that was used on this worksheet.

Column A	Column B	Column C	Column D	Column E E = C x D	Column F F = E/2,000	Column G	Column H H = F x G	
Criteria Pollutant	Emission Factor Origin (If use AP-42 list table number)	Emission Factor (lbs per unit of measurement)	Operating Rate (in units of measurement)	Uncontrolled Emissions (lbs)	Uncontrolled Emissions (tons)	1 - Overall Control Efficiency (1 - OCE)	Estimated Emissions (tons)	Internal Use Only
NO_x	AP42 table 1.4-1	280	560	156,800.00	78.40		78.40	
VOC	AP42 table 1.4-2	5.5	560	3,080.00	1.54		1.54	
PM_{10}	AP42 table 1.4-2	1.9	560	1,064.00	0.53		0.53	
$PM_{2.5}$	AP42 table 1.4-2	1.9	560	1,064.00	0.53		0.53	
TSP	AP42 table 1.4-2	1.9	560	1,064.00	0.53		0.53	
NH_3	FIRE	3.2	560	1,792.00	0.90		0.90	
SO_x	AP42 table 1.4-2	0.6	560	336.00	0.17		0.17	
CO	AP42 table 1.4-1	84	560	47,040.00	23.52		23.52	

* For the purposes of these worksheets, criteria pollutants include NO_x, SO_x, VOC, PM_{10}, $PM_{2.5}$, TSP, NH_3 and CO. Although lead is also a criteria pollutant, lead emissions are included in the hazardous air pollutant emissions calculations.

Emission Factor Method Calculation Form - Criteria Pollutants*

This worksheet is for calculating criteria pollutant emissions using emission factors. If you are not using emission factors to calculate criteria pollutant emissions, skip this worksheet. If you are using an AP-42 emission factor for ash- or sulfur-containing fuels, complete worksheet 4, and transfer the calculated emission factors from column I on that worksheet to column C on this worksheet.

Enter the point ID, SCC ID and stack ID numbers from worksheet 1.

Point ID Number	001		SCC ID Number	02		Stack ID Number	01

For all criteria pollutants that apply in column A, enter the source of the emission factor in column B and the emission factor in column C. Each emission factor should be in units of pounds per unit of measurement. Transfer the operating rate from worksheet 1 to column D. Multiply column C by column D to obtain uncontrolled emissions in units of pounds for each applicable pollutant; enter the emissions in column E. Divide uncontrolled emissions in pounds by 2,000 to obtain uncontrolled emissions in tons, and enter the result in column F. If the overall control efficiency is zero, transfer the uncontrolled emissions from column F to column H. If the overall control efficiency is not zero, complete worksheet 7 and transfer the quantity 1-OCE from column E on that worksheet to column G below. Multiply 1-OCE by the uncontrolled emissions in column F and enter the result in column H.

Transfer the total emissions for each pollutant from column H to worksheet 8 using the same point ID number that was used on this worksheet.

Column A	Column B	Column C	Column D	Column E $E = C \times D$	Column F $F = E/2,000$	Column G	Column H $H = F \times G$	
Criteria Pollutant	Emission Factor Origin (If use AP-42 list table number)	Emission Factor (lbs per unit of measurement)	Operating Rate (in units of measurement)	Uncontrolled Emissions (lbs)	Uncontrolled Emissions (tons)	1 - Overall Control Efficiency (1 - OCE)	Estimated Emissions (tons)	Internal Use Only
NO_x	AP42 table 1.3-1	24	24	576.00	0.29		0.29	
VOC	AP42 table 1.3-3	0.2	24	4.80	0.00		0.00	
PM_{10}	AP42 table 1.3-6	1	24	24.00	0.01		0.01	
$PM_{2.5}$	AP42 table 1.3-6	0.25	24	6.00	0.00		0.00	
TSP	AP42 table 1.3-1	2	24	48.00	0.02		0.02	
NH_3	FIRE	0.8	24	19.20	0.01		0.01	
SO_x	AP42 table 1.3-1	39.25	24	942.00	0.47		0.47	
CO	AP42 table 1.3-1	5	24	120.00	0.06		0.06	

* For the purposes of these worksheets, criteria pollutants include NO_x, SO_x, VOC, PM_{10}, $PM_{2.5}$, TSP, NH_3 and CO. Although lead is also a criteria pollutant, lead emissions are included in the hazardous air pollutant emissions calculations.

Source ID Number: _____ 0110888 _____

Emission Factor Method Calculation Form - Criteria Pollutants*

This worksheet is for calculating criteria pollutant emissions using emission factors. If you are not using emission factors to calculate criteria pollutant emissions, skip this worksheet. If you are using an AP-42 emission factor for ash- or sulfur-containing fuels, complete worksheet 4, and transfer the calculated emission factors from column I on that worksheet to column C on this worksheet.

Enter the point ID, SCC ID and stack ID numbers from worksheet 1.

Point ID Number	001		SCC ID Number	03		Stack ID Number	01

For all criteria pollutants that apply in column A, enter the source of the emission factor in column B and the emission factor in column C. Each emission factor should be in units of pounds per unit of measurement. Transfer the operating rate from worksheet 1 to column D. Multiply column C by column D to obtain uncontrolled emissions in units of pounds for each applicable pollutant; enter the emissions in column E. Divide uncontrolled emissions in pounds by 2,000 to obtain uncontrolled emissions in tons, and enter the result in column F. If the overall control efficiency is zero, transfer the uncontrolled emissions from column F to column H. If the overall control efficiency is not zero, complete worksheet 7 and transfer the quantity 1-OCE from column E on that worksheet to column G below. Multiply 1-OCE by the uncontrolled emissions in column F and enter the result in column H.

Transfer the total emissions for each pollutant from column H to worksheet 8 using the same point ID number that was used on this worksheet.

Column A	Column B	Column C	Column D	Column E $E = C \times D$	Column F $F = E/2{,}000$	Column G	Column H $H = F \times G$	
Criteria Pollutant	Emission Factor Origin (If use AP-42 list table number)	Emission Factor (lbs per unit of measurement)	Operating Rate (in units of measurement)	Uncontrolled Emissions (lbs)	Uncontrolled Emissions (tons)	1 - Overall Control Efficiency (1 - OCE)	Estimated Emissions (tons)	Internal Use Only
NO_x	AP42 table 1.3-1	24	35	840.00	0.42		0.42	
VOC	AP42 table 1.3-3	0.2	35	7.00	0.00		0.00	
PM_{10}	AP42 table 1.3-6	1	35	35.00	0.02		0.02	
$PM_{2.5}$	AP42 table 1.3-6	0.25	35	8.75	0.00		0.00	
TSP	AP42 table 1.3-1	2	35	70.00	0.04		0.04	
NH_3	FIRE	0.8	35	28.00	0.01		0.01	
SO_x	AP42 table 1.3-1	7.85	35	274.75	0.14		0.14	
CO	AP42 table 1.3-1	5	35	175.00	0.09		0.09	

* For the purposes of these worksheets, criteria pollutants include NO_x, SO_x, VOC, PM_{10}, $PM_{2.5}$, TSP, NH_3 and CO. Although lead is also a criteria pollutant, lead emissions are included in the hazardous air pollutant emissions calculations.

Guideline for Emission Factor Calculation for Ash- or Sulfur-Containing Fuels When Using AP-42 Emission Factors

This worksheet is designed to help calculate emission factors for ash- or sulfur-containing fuels when using emission factors from AP-42. If this worksheet is applicable, it should be used in conjunction with worksheet 3. Skip this worksheet if it is not applicable.

Enter the point ID number, SCC ID number, and SCC code from worksheet 1 in columns A, B and C. Enter the pollutant in column D and the emission factor in column E. Enter the ash or sulfur flag (A or S), units of measurement of the emission factor, and percent by weight of fuel of ash or sulfur in columns F, G and H. Multiply the emission factor from column E by the percent by weight of ash or sulfur, and enter the resulting calculated emission factor in column I. An example calculation is included below.

Transfer the calculated emission factor(s) in column I to column C on worksheet 3.

Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H	Column I
Point ID Number	SCC ID Number	SCC	Pollutant	Emission Factor	Ash or Sulfur Flag (A or S)	Emission Factor Units	% by Weight of Fuel	Calculated Emission Factor (lb pollutant/unit)
001	02	10200501	SOx	157	S	1000 gal	0.25	39.25
001	03	10200501	SOx	157	S	1000 gal	0.05	7.85

Example: Calculating PM and SO$_2$ Emission Factors for Bituminous Coal, Pulverized Dry Bottom Boiler

Fuel Analysis: _2.5_ Sulfur, % by weight
                    _11.3_ Ash, % by weight

SCC	Pollutant	Emission Factor*	Ash or Sulfur Flag	Emission Factor Units	% by Weight of Fuel	Calculated Emission Factor (lb/unit)
10100202	PM$_{10}$	2.3	A	lb/tons burned	11.3	26.0
10100202	TSP	10	A	lb/tons burned	11.3	113.0
10100202	SO$_2$	38	S	lb/tons burned	2.5	95.0

* Source: Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume 1, Chapter 1 External Combustion Sources, Section 1.1 Bituminous and Subbituminous Coal Combustion, September 1998. SO$_2$ factor is from Table 1.1-3, and PM$_{10}$ (filterable PM$_{10}$) and TSP (filterable PM) factors are from Table 1.1-4. Available via Internet at: http://www.epa.gov/ttn/chief/ap42/index.html.

Material Balance Method Calculation Form - Criteria Pollutants*

This worksheet is primarily for calculating VOC emissions using the material balance method. For applying the material balance method to sulfur-containing fuels, use worksheet 6. Skip this worksheet if it is not applicable.

Enter the point ID, SCC ID and stack ID numbers from worksheet 1.

Point ID Number	002		SCC ID Number	01		Stack ID Number	NA

In column A, enter the applicable criteria pollutant(s). Enter the total quantity of pollutant that enters the process or operation (Q_added) in column B. Enter the total quantity of pollutant that becomes an integral part of the product (Q_consumed) in column C. In column D, enter the total quantity of the pollutant recovered for reuse (Q_recovered). Subtract Q_consumed and Q_recovered from Q_added to obtain the uncontrolled emissions in pounds, and enter the result in column E. Divide the uncontrolled emissions in pounds by 2,000 to obtain the uncontrolled emissions in tons, and enter in column F. If overall control efficiency is zero, transfer the uncontrolled emissions from column F to column H. If the overall control efficiency is not zero, complete worksheet 7, and transfer the quantity 1-OCE from column E on that worksheet to column G below. Multiply the uncontrolled emissions in tons by 1-OCE, and enter the resulting estimated emissions in column H.

Transfer the total estimated emissions for each pollutant from column H to worksheet 8 using the same point ID number that was used on this worksheet.

Column A	Column B	Column C	Column D	Column E $E = B - C - D$	Column F $F = E/2,000$	Column G	Column H $H = F \times G$
Criteria Pollutant	Q_added (lbs)	Q_consumed (lbs)	Q_recovered (lbs)	Uncontrolled Emissions (lbs)	Uncontrolled Emissions (tons)	1 - Overall Control Efficiency (1 - OCE)	Estimated Emissions (tons)
VOC	221880	0	0	221,880.00	110.94	0.2	22.19

* For the purposes of these worksheets, criteria pollutants include NO_x, SO_x, VOC, PM_{10}, $PM_{2.5}$, TSP, NH_3 and CO. Although lead is also a criteria pollutant, lead emissions are included in the hazardous air pollutant emissions calculations.

Material Balance Method Calculation Form - Criteria Pollutants*

This worksheet is primarily for calculating VOC emissions using the material balance method. For applying the material balance method to sulfur-containing fuels, use worksheet 6. Skip this worksheet if it is not applicable.

Enter the point ID, SCC ID and stack ID numbers from worksheet 1.

Point ID Number	002		SCC ID Number	02		Stack ID Number	NA

In column A, enter the applicable criteria pollutant(s). Enter the total quantity of pollutant that enters the process or operation (Q_added) in column B. Enter the total quantity of pollutant that becomes an integral part of the product (Q_consumed) in column C. In column D, enter the total quantity of the pollutant recovered for reuse (Q_recovered). Subtract Q_consumed and Q_recovered from Q_added to obtain the uncontrolled emissions in pounds, and enter the result in column E. Divide the uncontrolled emissions in pounds by 2,000 to obtain the uncontrolled emissions in tons, and enter in column F. If overall control efficiency is zero, transfer the uncontrolled emissions from column F to column H. If the overall control efficiency is not zero, complete worksheet 7, and transfer the quantity 1-OCE from column E on that worksheet to column G below. Multiply the uncontrolled emissions in tons by 1-OCE, and enter the resulting estimated emissions in column H.

Transfer the total estimated emissions for each pollutant from column H to worksheet 8 using the same point ID number that was used on this worksheet.

Column A	Column B	Column C	Column D	Column E E = B - C - D	Column F F = E/2,000	Column G	Column H H = F x G
Criteria Pollutant	Q_added (lbs)	Q_consumed (lbs)	Q_recovered (lbs)	Uncontrolled Emissions (lbs)	Uncontrolled Emissions (tons)	1 - Overall Control Efficiency (1 - OCE)	Estimated Emissions (tons)
VOC	100000	0	66000	34,000.00	17.00		17.00

* For the purposes of these worksheets, criteria pollutants include NO_x, SO_x, VOC, PM_{10}, $PM_{2.5}$, TSP, NH_3 and CO. Although lead is also a criteria pollutant, lead emissions are included in the hazardous air pollutant emissions calculations.

Material Balance Method Calculation Form - Fuels Containing Sulfur

This worksheet is for calculating SO_x emissions using the material balance method. Skip this worksheet if it is not applicable.

Enter the point ID, SCC ID and stack ID numbers from worksheet 1.

Point ID Number		SCC ID Number		Stack ID Number	

In column B, enter the quantity of sulfur-containing fuel (F_burned). Enter the percent sulfur by weight of the fuel in column C. For the conversion factor in column D, enter 1.95 for coal or 2.00 for fuels other than coal. Multiply F_burned by the percent sulfur by weight and the conversion factor to obtain the uncontrolled emissions in pounds, and enter the result in column E. Divide the uncontrolled emissions by 2,000 to obtain uncontrolled emissions in tons, and enter in column F. If the overall control efficiency is zero, transfer the uncontrolled emissions from column F to column H. If the overall control efficiency is not zero, complete worksheet 7 and transfer the quantity 1-OCE from column E on that worksheet to column G below. Multiply the uncontrolled emissions in tons by 1-OCE, and enter the resulting estimated emissions in column H.

Transfer the total SO_x emissions to worksheet 8 using the same point ID number that was used on this worksheet.

Column A	Column B	Column C	Column D	Column E E = B x C x D	Column F F = E/2,000	Column G	Column H H = F x G
Criteria Pollutant	F_burned (lbs)	% Sulfur / 100	Conversion Factor (1.95 for coal, 2.0 for other fuels)	Uncontrolled Emissions (lbs)	Uncontrolled Emissions (tons)	1 - Overall Control Efficiency (1 - OCE)	Estimated Emissions (tons)
SO_x							
SO_x							
SO_x							
SO_x							
SO_x							
SO_x							
SO_x							
SO_x							
						Total Emissions	

Overall Control Efficiency - Criteria Pollutants and HAPs

Please use a separate worksheet for each air pollution control system. You may skip this worksheet if it is not applicable.

Enter the point ID and SCC ID numbers.

Point ID Number	002

SCC ID Number(s)	01

Briefly describe the air pollutant control system:

Hooding and ductwork to connect 3 presses to catalytic incinerator for VOC control

Enter the pollutant(s) in column A. In column B, enter the capture efficiency (CE) for each pollutant as a percentage. In column C, enter the control device efficiency (CDE) for each unit as a percentage. Calculate the overall control efficiency (OCE) as follows: OCE = (CE x CDE) / 10,000. Enter the OCE in column D. Subtract the OCE from 1.0 and enter the result in column E. Transfer the quantity 1 - OCE from column E to column G on worksheets 3, 5, 6, 9 and 10 as applicable for each pollutant.

Column A	Column B	Column C	Column D$D = (B \times C) / 10,000$	Column E	
Pollutant	Capture Efficiency (CE) (%)	Control Device Efficiency (CDE) (%)*	Overall Control Efficiency (OCE)OCE = (CE x CDE) / 10,000	1 - OCE	Internal Use Only
VOC	80	99.9	0.80	0.20	

* For efficient PM control devices, emissions exiting the control device can be assumed to be 100% PM $_{10}$. For this scenario, TSP factors and control efficiencies can be used to estimate PM$_{10}$.

Emissions Summary - Criteria Pollutants*

Enter the point ID numbers from all worksheet 1s into the column headers across the top row. Transfer the emissions in tons for each point ID number for the applicable criteria pollutants from worksheets 3, 5 and 6. For worksheets 3 and 5, you'll transfer the results from column H. For worksheet 6, you'll transfer the results from the total emissions box. If more than one emissions calculation worksheet was used for a point ID number, sum the emissions for each pollutant for that point ID number before entering the information on this worksheet. Sum the emissions for each pollutant, and enter in either the subtotal column (if more than one worksheet 8 is used) or the total column.

Transfer the results for NO_x, VOC, PM_{10} and SO_x from the total column to the corresponding pollutants in boxes 1 through 4 on the fee calculation worksheet 13. (Because fees are not paid on $PM_{2.5}$, NH_3, TSP or CO, these emissions totals do not need to be transferred to worksheet 13.)

	Criteria Emissions by Point ID Number *Insert point ID numbers in column headings below. For each point ID number, enter the emissions sum for each applicable pollutant.*												Subtotal (tons) *if using more than one worksheet 8*	Total (tons)	Internal Use Only
Point ID Number	001	002													
NO_x Emissions (tons)	79.11												79.11		
VOC Emissions (tons)	1.54	39.19											40.73		
PM_{10} Emissions (tons)	0.56												0.56		
$PM_{2.5}$ Emissions (tons)	0.53												0.53		
TSP Emissions (tons)	0.59												0.59		
NH_3 Emissions (tons)	0.92												0.92		
SO_x Emissions (tons)	0.78												0.78		
CO Emissions (tons)	23.67												23.67		

* For the purposes of these worksheets, criteria pollutants include NO_x, SO_x, VOC, PM_{10}, $PM_{2.5}$, TSP, NH_3 and CO. Although lead is also a criteria pollutant, lead emissions are included in the hazardous air pollutant emissions calculations.

Emission Factor Method Calculation Form - Hazardous Air Pollutants (HAPs)

This worksheet is for calculating HAP emissions using emission factors. If you are not using emission factors to calculate HAP emissions, skip this worksheet.

Enter the point ID, SCC ID and stack ID numbers from worksheet 1.

Point ID Number	002		SCC ID Number	01		Stack ID Number	NA

Calculate emissions for all HAPs, even if included in previous criteria pollutant emissions calculations. List the HAPs and their CAS numbers in column A. Enter the source of the emission factor in column B and the emission factor in column C. Be sure that each emission factor is given in pounds per unit of measurement. Transfer the operating rates from worksheet 1 to column D. Multiply column C by column D to obtain uncontrolled emissions in units of pounds for each applicable pollutant; enter the emissions in column E. Divide uncontrolled emissions in pounds by 2,000 to obtain uncontrolled emissions in tons, and enter the result in column F. If overall control efficiency is zero, transfer the uncontrolled emissions from column F to column H. If the overall control efficiency is not zero, complete worksheet 7 and transfer the quantity 1-OCE from column E on that worksheet to column G below. Multiply 1-OCE by the uncontrolled emissions in column F and enter the result in column H.

Transfer the total emissions, pollutant by pollutant, from column H to column D on worksheet 11 using the same point identification number that was used on this worksheet.

Column A		Column B	Column C	Column D	Column E E = C x D	Column F F = E/2,000	Column G	Column H H = F x G	
HAPs		**Emission Factor Origin (If use AP-42 list table number)**	**Emission Factor (lbs per unit of measurement)**	**Operating Rate (in units of measurement)**	**Uncontrolled Emissions (lbs)**	**Uncontrolled Emissions (tons)**	**1 - Overall Control Efficiency (1 - OCE)**	**Estimated Emissions (tons)**	**Internal Use Only**
Name	**CAS#**								
Xylene	1330207	MSDS	32	345	11,040.00	5.52	0.2	1.10	

Material Balance Calculation Form - Hazardous Air Pollutants (HAPs)

This worksheet is for calculating HAP emissions using the material balance method. If you are not using material balance to calculate HAP emissions, skip this worksheet.

Enter the point ID, SCC ID and stack ID numbers from worksheet 1.

Point ID Number	002		SCC ID Number	02		Stack ID Number	NA

Calculate emissions for all HAPs, even if included in previous criteria pollutant emissions calculations. In column A, enter the HAPs and CAS numbers. Enter the total quantity of the HAP that enters the process or operation (Q_added) in column B. Enter the total quantity of the HAP that becomes an integral part of the product (Q_consumed) in column C. In column D, enter the total quantity of the pollutant recovered for reuse (Q_recovered). Subtract Q_consumed and Q_recovered from Q_added to obtain the uncontrolled emissions in pounds, and enter the result in column E. Divide the uncontrolled emissions in pounds by 2,000 to obtain the uncontrolled emissions in tons, and enter in column F. If overall control efficiency is zero, transfer the uncontrolled emissions from column F to column H. If the overall control efficiency is not zero, complete worksheet 7, and transfer the quantity 1-OCE from column E on that worksheet to column G below. Multiply the uncontrolled emissions in tons by 1-OCE, and enter the resulting estimated emissions in column H.

Transfer the total emissions, pollutant by pollutant, from column H to column D on worksheet 11 using the same point identification number that was used on this worksheet.

Column A		Column B	Column C	Column D	Column E E = B - C - D	Column F F = E/2,000	Column G	Column H H = F x G	
HAPs		Q_added (lbs)	Q_consumed (lbs)	Q_recovered (lbs)	Uncontrolled Emissions (lbs)	Uncontrolled Emissions (tons)	1 - Overall Control Efficiency (1 - OCE)	Estimated Emissions (tons)	**Internal Use Only**
Name	**CAS#**								
Toluene	108883	22150	0	0	22,150.00	11.08		11.08	

Emissions Summary - Hazardous Air Pollutants (HAPs)

List the HAPs and CAS numbers in columns A and B. Enter the point ID numbers in column C. Transfer the annual emissions for each HAP for each point ID number from column H on worksheets 9 and 10 to column D on this worksheet. Sum the values in column D to obtain total HAP emissions in tons and enter in either the subtotal box (if more than one worksheet 11 is used) or the total box. If your facility's total PM_{10} emissions are ≥ 100 tons, for all HAPs that are considered PM_{10}, enter the HAP emissions for the point in column E in addition to column D. If your facility's total VOC emissions are ≥ 100 tons, for all HAPs that are considered VOC, enter the HAP emissions for the point in column F in addition to column D.

Transfer the total of column D to line 1 on worksheet 12 and box 5 on worksheet 13. The information in columns E and F is used in worksheet 12.

Column A	Column B	Column C	Column D	Column E	Column F	
HAP	CAS Number	Point ID Number	HAP Emissions by Point ID Number (tons)	PM_{10} HAP Emissions (tons) *Only fill in this column if facility's PM_{10} emissions ≥ 100 tons*	VOC HAP Emissions (tons) *Only fill in this column if facility's VOC emissions ≥ 100 tons*	Internal Use Only
Xylene	1330207	002	1.1			
Toluene	108883	002	11.08			
	Subtotals of Columns D, E and F *(if using more than one worksheet 11)*					
	Totals of Columns D, E and F		12.18			

Worksheet to Determine if HAP Emissions Are Subject to Fees

This worksheet is designed to determine whether you owe fees on emissions of a single HAP or a combination of HAPs. In addition, if your facility is paying fees on PM_{10} and/or VOC emissions, this worksheet will ensure that you don't pay twice for any HAP emissions that you're already paying for as part of your PM_{10} and/or VOC fees. You may skip this worksheet and move on to worksheet 13 if your facility does not emit any HAPs.

IMPORTANT NOTE ABOUT ROUNDING - Emissions should not be rounded to the nearest ton to meet the fee thresholds of 10 tons/year for a single HAP or 25 tons/year for a combination of HAPs. For example, if your facility emits a total of 24.5 tons/year of a combination of HAPs, you would enter 24.5 tons/year at line 1, but you would skip line 2 because 24.5 < 25 tons/year.

Line 1   **Enter the sum of the totals of column D from all worksheet 11s.**   `12.18`   tons/yr

Line 2   **If line 1 is ≥ 25 tons/year, enter the sum of the totals of columns E and F from all worksheet 11s. Enter zero if there are no HAPs in columns E and F on worksheet 11. If line 1 is < 25 tons/year, skip to line 4. (See note above about rounding at this step.)**   tons/yr

Line 3   **Subtract line 2 from line 1 and enter the result. Skip to line 8.**   tons/yr

Line 4   **If line 1 is < 25 tons/year, sum the total emissions for each individual HAP on all worksheet 11s. If the emissions for any individual HAPs are ≥ 10 tons/year, list the HAPs in lines 4a and 4b and enter the emissions. If no individual HAP is ≥ 10 tons/year, move on to worksheet 13. (See note above about rounding at this step.)**

   Line 4a   Toluene   `11.08`   tons/yr

   Line 4b   tons/yr

Line 5   **Add lines 4a and 4b and enter result.**   `11.08`   tons/yr

Line 6   **Sum the quantities of emissions in tons in columns E and/or F on worksheet 11 for the pollutant(s) listed in line 4a and line 4b. Enter zero if there are no emissions listed in columns E and/or F on worksheet 11 for the pollutant(s) listed in line 4a and 4b.**   tons/yr

Line 7   **Subtract line 6 from line 5 and enter result.**   `11.08`   tons/yr

Line 8   **If line 1 is ≥ 25 tons/year, enter result from line 3, otherwise enter result from line 7. This is the amount of HAP emissions subject to fees. Transfer this result to box 10 on worksheet 13.**   `11.08`   tons/yr

Emissions Summary and Fee Calculation

For the criteria pollutants, transfer the results from the total column on worksheet 8 to boxes 1 through 4. Note that total $PM_{2.5}$, TSP, NH_3 and CO emissions are not carried forward to this worksheet because fees are not paid on these pollutants. For HAPs, transfer the total of column D from worksheet 11 (or line 1 on worksheet 12) to box 5 and the results from line 8 on worksheet 12 to box 10.

IMPORTANT NOTE ABOUT ROUNDING - Total facility-wide emissions should be rounded to the nearest ton for the facility-wide emissions summary in boxes 1 - 5. However, emissions should *not* be rounded to the nearest ton to determine whether or not your facility meets the fee thresholds. For example, a facility that emits a total of 99.7 tons/year of NO_x does not owe fees on its NO_x emissions because 99.7 tons/year < 100 tons/year.

Facility-Wide Emissions Summary

Round facility-wide emissions to the nearest ton before entering into boxes 1 - 5. If criteria emissions are between 99 and 100 tons, truncate the value to 99 and enter 99 in appropriate box (boxes 1 - 4).

Total Facility-Wide NO_x Emissions (tons/year)	79	Box 1
Total Facility-Wide VOC Emissions (tons/year)	41	Box 2
Total Facility-Wide PM_{10} Emissions (tons/year)	1	Box 3
Total Facility-Wide SO_x Emissions (tons/year)	1	Box 4
Total Facility-Wide HAP Emissions (tons/year)	12	Box 5

Emissions Fee Determination

NOx Emissions Subject to Fees If box 1 < 100 tons, enter 0. If box 1 > 4,000 tons, enter 4,000. Otherwise, enter box 1.		Box 6
VOC Emissions Subject to Fees If box 2 < 100 tons, enter 0. If box 2 > 4,000 tons, enter 4,000. Otherwise, enter box 2.		Box 7
PM_{10} Emissions Subject to Fees If box 3 < 100 tons, enter 0. If box 3 > 4,000 tons, enter 4,000. Otherwise, enter box 3.		Box 8
SO_x Emissions Subject to Fees If box 4 < 100 tons, enter 0. If box 4 > 4,000 tons, enter 4,000. Otherwise, enter box 4.		Box 9
HAP Emissions Subject to Fees Enter results from line 8, worksheet 12 (rounded to the nearest ton).	11	Box 10
Sum of boxes 6 - 10. This is the total quantity of emissions subject to fees.	11.00	Box 11
Multiply box 11 by \$25/ton and enter the result.	275.00	Box 12
Enter your fee credit carried over from previous years. Enter 0 or leave blank if no fee credit applies.		Box 13
Subtract box 13 from box 12 and enter the result. This is the emissions fee due.	275.00	Box 14